CMSC 250 Homework 7 Spring 2006

Due Wed March 15 at the beginning of your discussion section.

You must write the solutions to the problems single-sided on your own lined paper, with all sheets stapled together, and with all answers written in sequential order or you will lose points.

1. Write the first four terms of the following sequences.

   (a) $\forall k \geq 1,\ a_k = \frac{k+1}{2k-1}$.

   (b) $\forall k \geq 1,\ a_k = k^{k+1} - k^{k+2}$.

2. Calculate the sum of the first three terms of each sequence from problem 1 both using a calculator and by hand using exact integer and fractional arithmetic.

3. Write the product of the first three terms of the sequences from problem 1.

4. For each of the following, change the following sums and/or products in expanded form to summation or product notation.

   (a) $-\frac{2}{3*8} + \frac{3}{9*4} - \frac{4}{27*2}$.

   (b) $\frac{2}{x} \times \frac{5}{x^2} \times \frac{10}{x^3} \times \frac{17}{x^4}$.

   (c) $(1)^1 * (1 - \frac{1}{2})^2 * (1 - \frac{1}{2} + \frac{1}{3})^3 * (1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4})^4$.